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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/607,077

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Matthew Ashby

ASHBY/I DIV

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EXAMINER

STRZELECKA, TERESA E

ART UNIT

PAPER NUMBER

1637

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/607,077	<b>Applicant(s)</b> ASHBY, MATTHEW	
	<b>Examiner</b> Teresa E. Strzelecka	<b>Art Unit</b> 1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 45-56 is/are pending in the application.
- 4a) Of the above claim(s) 51-56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 45-50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on April 30 and July 27, 2007 has been entered.

2. Claims 45-56 were previously pending, with claims 51-56 withdrawn from consideration. Applicant amended claims 45 and 46. Claims 45-56 are pending; claims 45-50 will be examined.

3. Applicant's amendments overcame the rejection of claims 45-50 under 35 U.S.C. 102(b) as anticipated by Telang et al.

4. This office action presents new grounds for rejection necessitated by amendment. Applicant's arguments regarding claim interpretation are addressed below, as they are pertinent to the newly presented rejections.

### ***Response to Arguments***

5. Applicant's arguments filed April 30, 2007 have been fully considered but they are not persuasive.

Regarding the interpretation of terms "perfect correlation", "high correlation" and "moderate correlation", Applicant argues that the terms are defined on page 29 using standard statistical analysis. However, first, the phrase "The degree of correlation for  $r$  may be defined as follows:" (emphasis added) is not the same as "The degree of correlation  $r$  is defined as follows:" (emphasis added), therefore, the phrase "may be defined" is not a definition. Further, the standard statistical analysis from which  $r$  is calculated related two sets of numerical values to each other, whereas there

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is no requirement for any numerical variables in the claims: the presence of a marker (not a numerical values) is correlated to the presence of a certain parameter, again, not a numerical value. Therefore, the interpretation of these terms by examiner is justified in view of the above.

***Claim Interpretation***

6. The term “environmental sample” has not been defined by Applicant, therefore it is interpreted as any sample.
7. The term “environmental parameter of interest” has not been defined by Applicant, therefore it is interpreted as any parameter.
8. The term “parameter of interest is surface oil or natural gas deposit” is interpreted as any parameter pertaining to oil or gas.
9. The terms “perfect correlation”, a “high degree of correlation” and “moderate degree of correlation” have not been defined, therefore, the first two terms are treated as equivalent, and the third as any degree of correlation.
10. The term “PCR probe” has not been defined, therefore it is interpreted as either a primer or a probe used in the PCR reaction or to detect PCR reaction products.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 45-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Golsteyn Thomas et al. (Appl. Env. Microbiol., vol. 57, pp. 2576-2580, 1991).

Claims 45 and 46 will be considered together in claim 45, which is a species of claim 46.

Regarding claims 45 and 46, Golsteyn Thomas et al. teach a method of identifying the presence of *Listeria monocytogenes* (= environmental parameter of interest) by identifying the presence of the listeriolysin gene of *L. monocytogenes* (= nucleic acid marker sequence) (Abstract; page 2576, paragraphs 1-4) by:

a. providing an environmental sample containing a population of interest (Golsteyn Thomas et al. teach providing milk and meat samples containing microbial populations (page 2576, last paragraph; page 2577, first paragraph).);

b. isolating genomic DNA from the environmental sample (Golsteyn Thomas et al. teach isolating DNA from the samples (page 2577, second and third paragraphs).);

c. assaying the genomic DNA utilizing a plurality of species-specific probes to the nucleic acid marker sequence that shows a correlation to the parameter of interest (Golsteyn Thomas et al. teach performing a PCR assay with the *L. monocytogenes* specific primers (page 2577, paragraphs 4-8; Tables 1 and 2; Fig. 1).); and

d. inferring the presence of the parameter of interest based upon the presence of the nucleic acid marker sequence in the genomic DNA isolated from the sample, wherein the presence of the nucleic acid marker sequence in the genomic DNA is determined using the plurality of species-specific probes as PCR probes of the genomic DNA (Golsteyn Thomas et al. teach inferring the presence of *L. monocytogenes* in the samples from the presence of the amplification product of the listeriolysin O gene (page 2578; Fig. 2-4).).

Regarding claims 47-49, Golsteyn Thomas et al. teach perfect correlation between the presence of the gene and the presence of *L. monocytogenes* (page 2578, first paragraph; Table 2).

***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 45-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leu et al. (Anaerobe, vol. 4, pp. 165-174, 1998).

A) Claims 45 and 46 will be considered together in claim 45, which is a species of claim 46.

Regarding claims 45 and 46, Leu et al. teach a method of identifying the presence of hydrogen sulfide in oil fields (= environmental parameter of interest) by identifying the presence of the 16S rDNA of sulfate-reducing bacteria (SRB) (= nucleic acid marker sequence) (Abstract; page 165; page 166, first and third paragraphs) by:

a. providing an environmental sample containing a population of interest (Leu et al. teach providing samples from oil fields containing microbial populations (Table 1; page 166, fourth paragraph).);

b. isolating genomic DNA from the environmental sample (Leu et al. teach isolating DNA from the samples (page 167, second paragraph).);

c. assaying the genomic DNA utilizing a plurality of species-specific probes to the nucleic acid marker sequence that shows a correlation to the parameter of interest (Leu et al. teach performing a PCR assay with primers specific for the 16S rRNA genes (page 167, third paragraph).); and

d. inferring the presence of the parameter of interest based upon the presence of the nucleic acid marker sequence in the genomic DNA isolated from the sample, wherein the presence of the

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nucleic acid marker sequence in the genomic DNA is determined using the plurality of species-specific probes as PCR probes of the genomic DNA (Leu et al. teach inferring the presence of hydrogen sulfide from the presence of thermophilic SRB in the samples (page 170, paragraphs 2-4; page 171, last paragraph; page 172, last paragraph).).

Regarding claims 47-49, Leu et al. teach perfect correlation between the presence of hydrogen sulfide and the presence of SRB (page 170, fourth paragraph).

Regarding claim 50, Leu et al. teach oil fields (page 166, fourth paragraph; Table 1).

B) Leu et al. do not specifically teach using species-specific primers or probes in analysis of oil field samples. However, they suggest using the cloned SRB sequences to obtain species-specific probes to identify individual SRBs (page 172, third paragraph).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to have used species-specific primers as suggested by Leu et al. to detect individual species of sulfur-reducing bacteria in oil fields. The motivation to do so would have been that this would enable determination of the abundance and distribution of SRB in oil fields (page 172, third paragraph) and further understanding of the oil formation souring caused by the bacteria (page 165, first paragraph).

15. No claims are allowed.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa E. Strzelecka whose telephone number is (571) 272-0789. The examiner can normally be reached on M-F (8:30-5:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (571) 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Teresa E Strzelecka  
Primary Examiner  
Art Unit 1637

*Teresa Strzelecka*  
*10/15/07*